REMARKS

The Applicants appreciate the Examiner's thorough examination of the subject application and the indication that claims 54-56, 58, 61, 63-68, 70, and 71, if rewritten in independent format, would be in a condition for allowance. Applicants request reconsideration of the subject application based on the following remarks.

Claims 51-76, 118, 119, and 121-124 are currently pending in the application. Claims 77-117 and 120, which are directed to non-elected subject matter, have been cancelled without prejudice to applicants' right to pursue the cancelled claims in one or more divisional applications. New claim 124 has been added. Support for claim 124 may be found in claim 51 and throughout the specification.

Claims 51-53, 57, 59-60, 62, 60, 72-76, 118-119, and 121-123 were rejected under 35 U.S.C. §103(a) as being allegedly unpatentable over Kindler (U.S. Patent 4,865,930) in view of Arnold (U.S. Patent 4,714,663).

The rejection is respectfully traversed.

The present invention provides a method of producing a composite **solid** polymer electrolyte membrane (SPEM) comprising a porous polymer substrate interpenetrated with an ion-conducting material. The instant methods comprise the steps of:

1. preparing a mixture of the polymer substrate and the ion-conducting material; and
2. casting or extruding the composite SPEM from the mixture prepared in step 1.

The composite polymer electrolyte membranes prepared by the methods of the invention are solid. That is, the membranes are substantially free of porosity or voids in the composite structure.

Applicants note that the methods of the invention comprise the step of co-processing, i.e., co-extrusion or co-casting, of the polymer substrate and the ion-conducting membrane to form the composite SPEM. Thus, the polymer substrate and the ion-conducting material are mixed prior to casting or forming of the composite membrane.

In contrast, neither of the references relied upon by the Office Action teach or suggest premixing of a support polymer and an ion-conducting material prior to film formation.

As the reference is understood, Kindler recites methods of making ion-conductive and gas permeable membranes comprising the steps of

(a) providing a porous ion-impermeable polymer substrate;

(b) impregnating the substrate with an ion-conducting polymer; and

(c) stretching the composite substrate to create pores through which a gas can permeate.

Thus, Kindler teaches a method of making an porous composite membrane comprising infiltrating a **preformed** porous substrate with an ion conducting material and then stretching the formed composite membrane to introduce porosity.

Kindler neither discloses nor suggests methods of manufacturing **solid** SPEM by co-processing (i.e., casting or extruding) a mixture comprising both the ion-conducting material and the substrate polymer.

Arnold merely recites sulfonated polymers and the use of films cast from solutions of such sulfonated polymers in battery applications. Arnold neither discloses nor suggests any methods of producing composite ion-conducting membranes including methods comprising mixing a substrate polymer with the ion-conducting material and then casting or extruding the mixture to form the composite membrane.

The claims are patentable, for at least the reasons discussed, over the prior art cited in the outstanding office action. Applicants respectfully request reconsideration and allowance of the claims.

Although it is not believed that any additional fees are needed to consider this submission, the Examiner is hereby authorized to charge our deposit account no. 04-1105 should any fee be deemed necessary.

Respectfully submitted,

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